NASA launches 2005 Explorer Schools

by Amiko Nevills

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Above: *JSC's Deputy Director of Education Phil West explains some of the challenges of space travel while he demonstrates an astronaut spacesuit.*

Right: *NASA's Chief of Education Adena Williams Loston addresses students, teachers and administrators at the 2005 NASA Explorer Schools launch ceremony.*

ALONG with about 300 students and educators across the country, NASA rolled out to launch another 50 schools to explore new ways of learning math, science and technology.

The NASA Explorer Schools are the heart of a unique educational program that reaches elementary- to high-school pupils in all 50 states, Puerto Rico and the District of Columbia.

The 2005 class of NASA Explorer Schools, which spans 25 states, was named recently at Space Center Houston, the official visitor's center next to Johnson Space Center, during a ceremony that launched the program's third year.

Before countdown, some students of the 2003 and 2004 Explorer classes got a quick lesson in spacesuits, spacewalks and the laws of inertia and gravity.

Student volunteers took the stage as Phil West, deputy director of education at JSC, used a balloon to demonstrate spacesuit pressurization and answered questions like "What happens when an astronaut sweats?" and "How does an astronaut breathe in a spacesuit?"

To begin the liftoff ceremony, NASA's chief education officer, Adena Williams Loston, greeted students and the educators of the newest class of Explorer Schools.

"The entire universe – the planets, stars and distant galaxies – will be your classroom," Loston said. "As NASA pursues the Vision for Space Exploration, we want to prepare you for tomorrow's space exploration challenges, when we send a combination of human pioneers and robotic pathfinders to the Moon, Mars and beyond."

A breaking message from the Expedition 11 crew in space on the International Space Station was played for the students. Commander Sergei Krikalev and NASA ISS Science Officer and Flight Engineer John Phillips welcomed the class of 2005 Explorer School from afar. "See you in space," Phillips said, signing off.

Eighth-grader Latasha Sharp, who attends a NASA Explorer School at Dr. Anna Howard Shaw Middle School in Philadelphia, Pa., talked to the group about her experiences in the program.

"Because we are a NASA Explorer School, many universities and community organizations have become our partners," Sharp said. "I met mathematicians who taught me how math connects with everyday life. I also met professors and graduated students who taught me robotic designs and programming."

"With the support of my parents and teachers, these experiences make my dream of becoming an engineer more realistic," she said.

Astronauts Ellen Baker, Barbara Morgan and Franklin Chang-Diaz talked with students about their inspirations and the impact education has had in their careers today.

Baker, who graduated from Bayside High School in New York, credited her parents and teachers with supporting her to pursue her dreams.

"My heroes were my teachers," she said. "Schools had numbers instead of names. My high school was so big there were 1,400 kids in my graduating class. Even though I was one of many, many students, my teachers took great care in each of us, and they supported me and they nourished my brains and they encouraged me."

NASA's first educator astronaut Morgan, a former third-grade teacher, thanked the teams for allowing her the opportunity to work with them during the NASA Explorer School Symposium.

"I have seen education at its very best," Morgan said. "The students, teachers, parents, administrators and NASA folks all have been working together in teams to learn. You've been exploring; you've been experimenting and you've been discovering to open doors to great opportunities, and what I think are great opportunities for our country and for the world."

Veteran of seven spaceflights Chang-Diaz told students that he had always dreamed of becoming an astronaut. He talked about how the early days of spaceflight inspired him to pursue his dreams.

"We are charting a new course," Chang-Diaz said. "We have great hopes, but we face a lot of challenges. The ships that will take us to Mars will be like nothing we've ever seen, but maybe you will get to design that ship. We have great hopes and aspirations for you."

The Explorer Schools Program is sponsored by NASA's education office in collaboration with the National Science Teachers Association. Each year, the program establishes a three-year partnership between NASA and 50 Explorer Schools to enrich student learning across the nation.

Eighty-seven percent of all NASA Explorer Schools are in high poverty areas, and 76 percent represent predominantly minority communities. Ninety-eight percent of the 2005 class is in high poverty areas, and 82 percent in predominantly minority communities; 19 are in Hispanic communities.

During the three-year partnership, Explorer Schools work with NASA people and others to create and apply strategic plans for staff and students. Learning agendas promote and support the use of NASA content and programs to address the teams' local needs in mathematics, science and technology education.

"NASA has helped to change my life by exposing me to careers and student opportunities while increasing my knowledge of the universe, solar system and our planet Earth," Sharp said.

Spaceflight Meteorology Group

Keeping an eye on the sky

by Brad Thomas

Weather affects many aspects of everyday life. People often turn to weather forecasts to help plan activities and it is no different with human spaceflight endeavors. Flight controllers at the Mission Control Center and NASA officials turn to the Spaceflight Meteorology Group (SMG) at Johnson Space Center to provide forecasts for Space Shuttle missions and other activities.

Even though SMG is part of the National Weather Service (NWS), its duties are different than the more common regional weather office.

"A regional weather office does forecasts, statements, watches and warnings for a set of counties around its area," Frank Brody, SMG chief, said. "We provide support for NASA and the human spaceflight program."

That support includes providing weather forecasts and briefings to NASA personnel. SMG, which is part of the Mission Control team, provides pre- and post-flight weather analyses and documentation for Space Shuttle missions. The group also informs the JSC community of adverse weather impacting the Center.

The SMG forecasters serve as meteorological consultants to the JSC community for current and future spaceflight endeavors. In addition, SMG develops tools and techniques to enhance its weather support and to improve the science of meteorology.

For a Space Shuttle mission, SMG provides around-the-clock operations for a 36-hour period before a scheduled launch. While the Shuttle is in orbit, the group provides mission support each day, and resumes around-the-clock support 36 hours before landing. If there are delays, they will maintain 24-hour support until the orbiter touches down.

"In the event they (the crew) have to come home early, we generate forecasts for Kennedy Space Center (KSC), Edwards Air Force Base and the White Sands Test Facility," Karl Silverman, SMG forecaster, said. "We also provide upper winds forecasts for the emergency landing sites around the world."

The NWS, originally called the Weather Bureau, has provided support for NASA missions dating back to the early days of human spaceflight. The NWS has supported such programs as Mercury, Gemini, Apollo and Shuttle.

In the 1960s, the spaceflight meteorology branch of the Weather Bureau had offices located at JSC, Cape Canaveral, Fla., Miami, Honolulu and Washington D.C. When NASA tasked each Center to select its weather support structures in the late 1970s, KSC elected to use the U.S. Air Force and JSC chose to retain the NWS.

SMG works with the U.S. Air Force 45th Weather Squadron, which forecasts weather for Shuttle and uncrewed rocket launches from KSC and Cape Canaveral. The Air Force forecasters provide daily weather support for launch processing operations at KSC, toxic dispersion weather support and Shuttle ferry flight support.

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From left to right: Spaceflight Meteorology Group Forecasters Doris Hood, Richard Lafosse (standing), Karl Silverman and Dan Bellue analyze and discuss weather conditions for a Space Shuttle landing site.

SMG has been busy during the past two years, working to increase and improve its training during the lag in Shuttle missions.

In addition to participating in mission simulations with Mission Control, SMG has added two simulations specifically designed to help the forecasters. These training exercises, one for launch and one for landing, use the current weather conditions on the days of the exercises.

"Most simulations were done without weather as a main purpose," Brody said. "These used real weather. Real weather gives forecasters better training."

The launch and landing simulations involved people from JSC, Marshall and KSC as well as Mission Control. Richard Lafosse, SMG forecaster, said the simulations have helped in their efforts with other weather and spaceflight groups. "We have really increased our communication," he said.

During hurricane season, the SMG serves in advising JSC officials. The forecasters at the National Hurricane Center in Florida are responsible for tropical system forecasts, but the SMG personnel are able to listen to the forecast discussions. This allows SMG to relay more in-depth information to officials who are considering in which hurricane condition, or level of preparation, to place JSC. SMG also provides 24-hour support for hurricanes if requested by JSC.

Silverman said the constant state of change in weather and SMG's global view is what he likes most about being a meteorologist. "It is never the same," he said. "It is always a challenge. We have an opportunity to see weather happening all around the world."

Brody said that working with the people involved in the space program gives him the biggest thrill. "It is being in a position to be an expert and taking that expertise to help other experts," he said.

For more information on the Spaceflight Meteorology Group and current JSC forecasts and conditions, visit: **http://www.srh.noaa.gov/smg/**.

NASA launches new hurricane Web page

NASA recently launched an Internet resource page highlighting the Agency's diverse hurricane research. The site opens just in time for the 2005 Atlantic Ocean hurricane season, which officially runs from June 1 through November 30. The information is available on the Web, at:

http://www.nasa.gov/hurricane

The Web page is a compilation of data from various satellites and computer models, and it explains why and how NASA investigates hurricanes. It also covers the relationship of NASA's research focus as compared to other agencies' operational emphasis.

The site provides access to data about active hurricanes and famous past storms. Users can search by hurricane topic, such as how storms are formed, how they are measured and how they affect land or ocean life. The multimedia section of the site features animation, satellite, video and still images of hurricanes.